Space Weather Forecast

Issued on Tuesday, 28 June 2022 at 13:03 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of Moderate-class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with one small Common-class flare observed. There are five sunspot regions on the visible disk. The largest region located in the southern hemisphere near the centre disc was responsible for the Common-class flare at 27/1843 UTC. A new region has also developed on its northern side. It is currently a small bipolar region, albeit growing, one of the spots displaying a small penumbra. All remaining regions are small and simple groups at this time.

There are considered to be no new Earth-directed Coronal Mass Ejections (CMEs) showing on available imagery. The Solar Dynamics Observatory (SDO) outage is now over but it'll take a while for the data to back-fill the gaps, meaning there is still a possibility for weak transient features to be embedded in the solar wind.

Solar Wind / Geomagnetic Activity: The solar wind speed was largely elevated, between 500-570 km/s, suggesting the influence of a coronal hole high speed stream. The total magnetic field strength was weak, with only small fluctuations in its important North-South component. The resulting geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be Low, with only a slight chance of isolated M-class flares.

Solar Wind / Geomagnetic Activity: A CME that left the Sun on the 24th was signalled to perhaps give a glancing blow in the early UTC hours of the 28th but it most likely passed ahead of Earth. No other earth-directed CMEs currently feature in this forecast. Solar winds are expected to slowly come back to slow-ambient levels over the next 2 or 3 days as the influence from the two small coronal holes currently present on the western hemisphere wanes, with no further significant enhancements expected. Geomagnetic activity is therefore expected to be mainly Quiet with isolated Unsettled intervals through this period.

Energetic Particles / Solar Radiation: In the absence of any significant sunspot development, the count rate of energetic particles (high energy protons) is forecast to persist at background levels, with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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